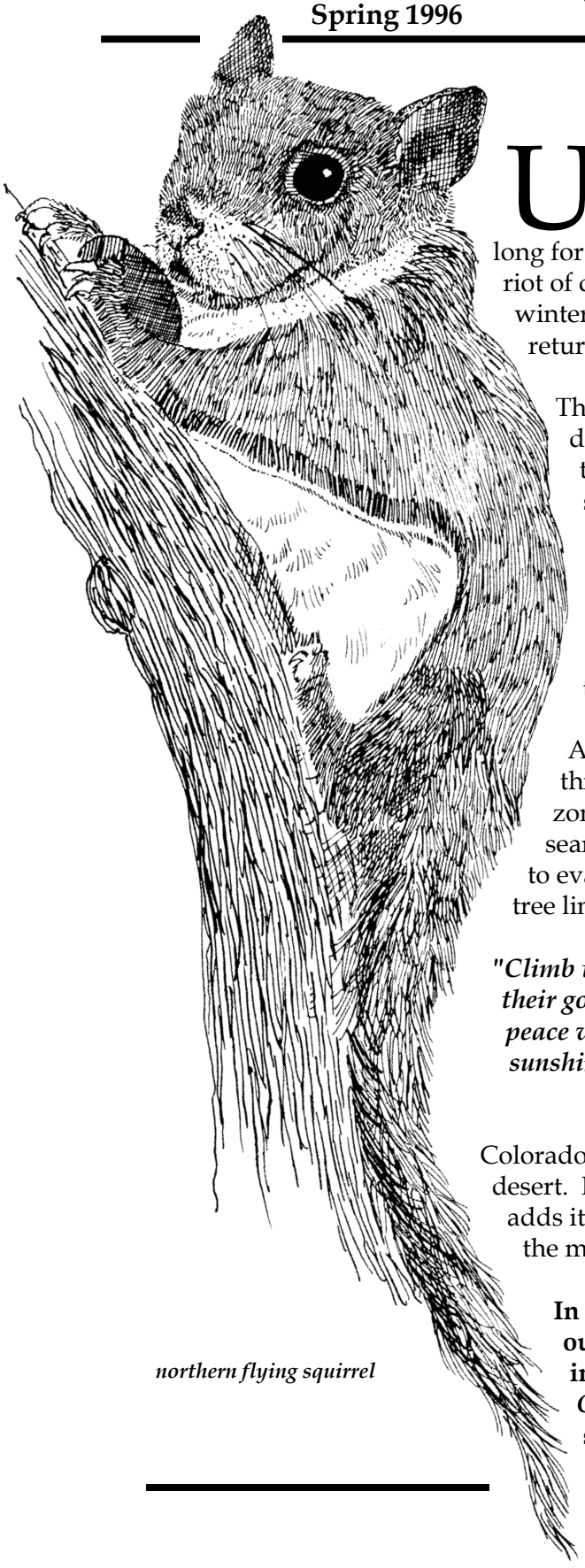
Growing WILD

Spring 1996

Utah's Project WILD Newsletter

From the Top



northern flying squirrel

Utah's mountains call to us; from the pinyon clad, gray limestone slopes of the Confusion Range, to the red-flanked La Sals boasting snow-capped peaks. In the summer, we long for cool, green conifer forests and clear alpine lakes. Each fall, a riot of color and light dusting of snow proclaims the coming of winter. If you leave Utah, you miss the mountains. When you return, you greet them as you would an old friend.

The mountains climb abruptly and stand clearly above dry, desert lands. Even though Utah is the second driest state in the nation, the mountains capture enough moisture to support an incredible diversity of plant and animal communities. A climb of 1000 feet in the mountains is equivalent to a journey north of 600 miles. Hiking from the base of Mount Nebo, you journey through the desert life zone, passing into forests similar to those found in northern Idaho and Canada, finally emerging into a life zone similar to Arctic tundra.

Animals do not occur randomly in nature. As you pass through each life zone you will find animals unique to that zone. Northern flying squirrels glide through coniferous forests searching for seeds, nuts, insects and mushrooms, while trying to evade goshawks and owls. Pikas, found in rocky areas above tree line, cut grass and dry it in the sun to store like hay between rocks and boulders. Related to rabbits, the pika is one of the few animals which lives year-round in the harsh, tundra-like zone.

"Climb the mountains and get their good tidings. Nature's peace will flow into you as sunshine flows into trees."
-John Muir-

Contributing to this biodiversity is the meeting of ecoregions in Utah-Colorado Plateau, the Rocky Mountains, Great Basin and Mojave desert. Nowhere else on earth do these ecoregions meet. Each region adds its own unique species to the mountains, making Utah one of the most biologically diverse states in the nation.

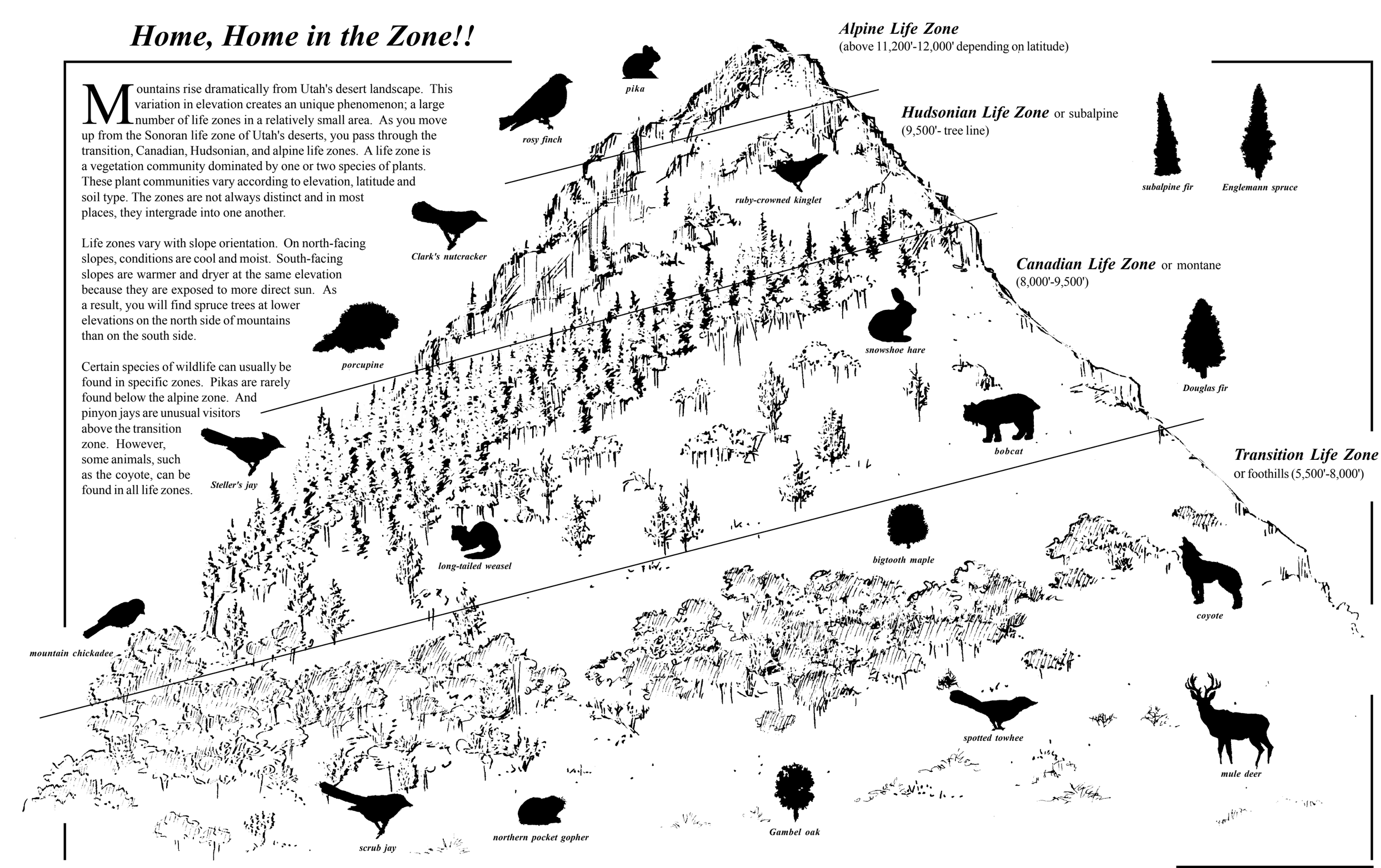
In My First Summer in the Sierras, John Muir says, "... And our first pure mountain day, warm, calm, cloudless, - how immeasurable it seems, how serenely wild!" This issue of *Growing WILD* and *Nature's Call* invites you and your students to explore Utah's mountains.

Home, Home in the Zone!!

Mountains rise dramatically from Utah's desert landscape. This variation in elevation creates an unique phenomenon; a large number of life zones in a relatively small area. As you move up from the Sonoran life zone of Utah's deserts, you pass through the transition, Canadian, Hudsonian, and alpine life zones. A life zone is a vegetation community dominated by one or two species of plants. These plant communities vary according to elevation, latitude and soil type. The zones are not always distinct and in most places, they intergrade into one another.

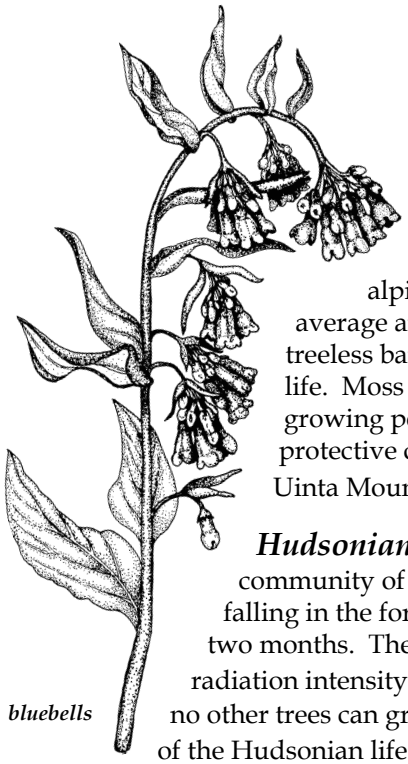
Life zones vary with slope orientation. On north-facing slopes, conditions are cool and moist. South-facing slopes are warmer and dryer at the same elevation because they are exposed to more direct sun. As a result, you will find spruce trees at lower elevations on the north side of mountains than on the south side.

Certain species of wildlife can usually be found in specific zones. Pikas are rarely found below the alpine zone. And pinyon jays are unusual visitors above the transition zone. However, some animals, such as the coyote, can be found in all life zones.



North-Facing Slope

South-Facing Slope



bluebells

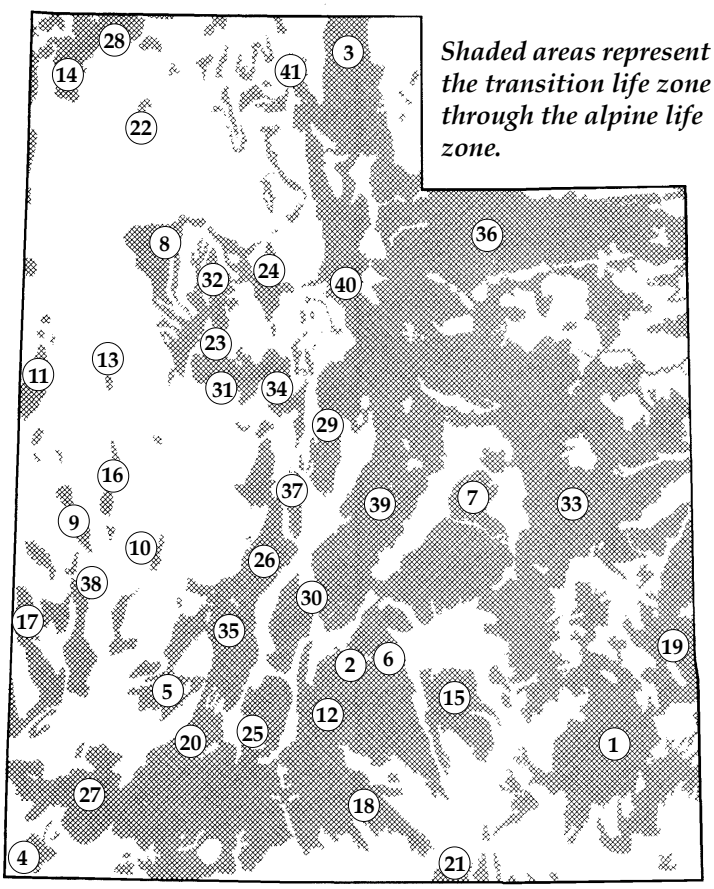
Life Zones of Utah's Mountains

Alpine (above 11,200'- 12,000' depending on latitude) Wind and cold shape the alpine life zone to look like the arctic tundra. One hundred mile per hour winds, average annual temperatures below freezing, and limited effective precipitation create a treeless barren looking landscape. But if you look closely, you will discover an abundance of life. Moss pinks, a cushion-like plant, is similar to many of the plants found here. It is a slow growing perennial, short, with small parts except the flower, and leaves often covered by a protective cuticle or dense hairs to reduce water loss. You can find the alpine life zone in the Uinta Mountains.

Hudsonian or subalpine (9,500'- tree line) The tangled spruce-fir forest is the dominant plant community of this life zone. The climate is cold, windy and moist with most of the precipitation falling in the form of snow. Snow pack remains well into summer and the frost free season lasts only two months. The dense stands of conifers modify the harsh climate by reducing wind speed and radiation intensity and by preventing moisture loss. Spruce-fir forest is the climax community because no other trees can grow in its shade at this elevation. The area around the town of Alta is a good example of the Hudsonian life zone.

Canadian or montane (8,000'-9,500') At this elevation in Utah you might find a forest dominated by lodgepole pine, ponderosa pine, aspen or Douglas fir. The dominant plant community is dictated by slope orientation, soil type, and soil moisture. All the forests at this elevation harbor critical habitats for many species of wildlife. Ponderosa pine forests can be found on Elk Ridge in the Abajo Mountains. Douglas fir forests are common in the Tushar Mountains. Lodgepole pine forests spread across the north slopes of the Uintas.

Transition or foothills (5,500'-8,000') The most common plant communities at this elevation in Utah are pinyon-juniper woodlands and oak-maple shrublands. Pinyon-juniper woodlands cover 9 million acres in Utah. This "pygmy" forest occupies warm, dry sites with mean annual temperatures between 45° and 55°F. The frost-free season is usually over 80 days. Thick stands of oak-maple shrublands ring many of Utah's mountains. This plant community is often intermixed with mountain mahogany and provides important habitat to a diverse animal community.



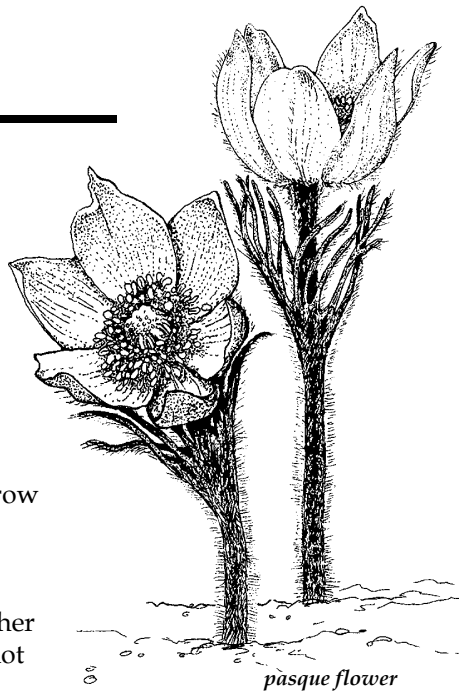
Shaded areas represent the transition life zone through the alpine life zone.

Mountains of Utah

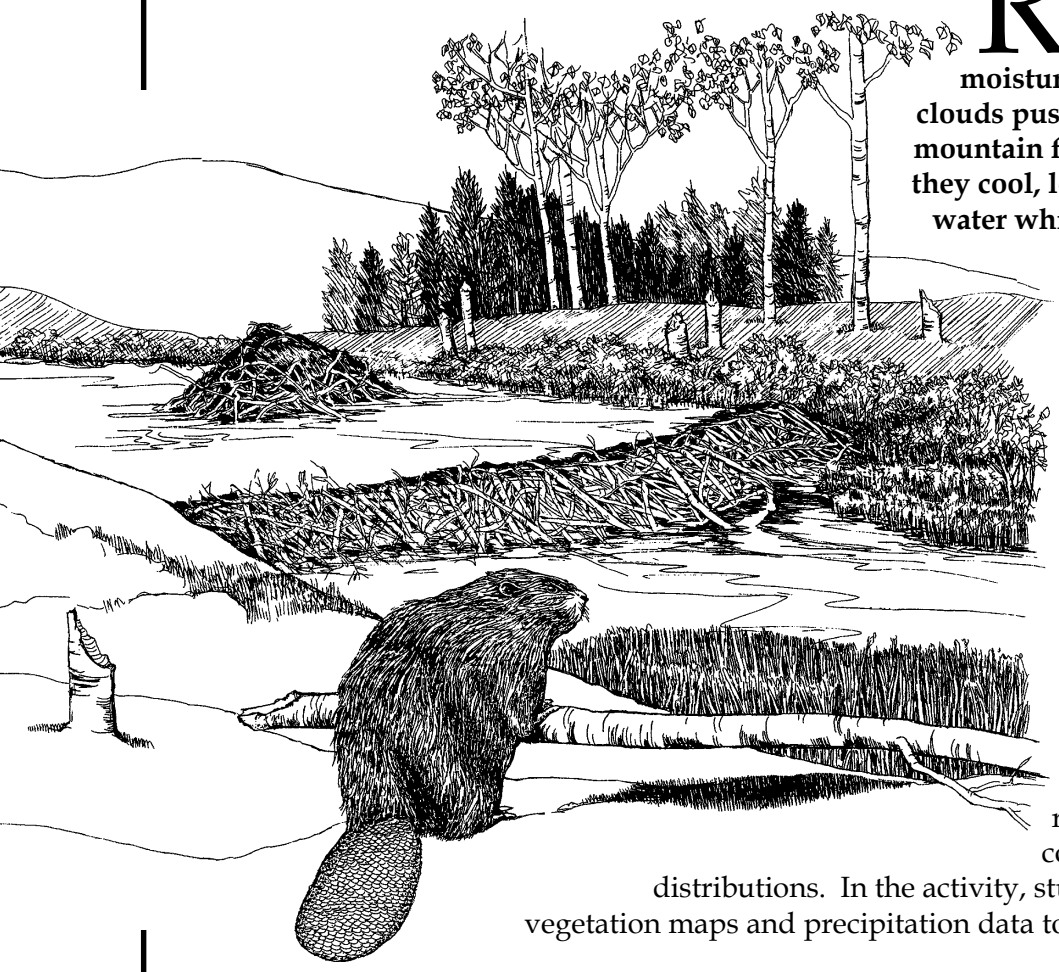
1. Abajo Mtns. (11,360')
2. Aquarius Plateau (11,124')
3. Bear River Range (9,979')
4. Beaver Dam Mtns. (7,746')
5. Black Mtns. (8,674')
6. Boulder Mtn. (11,062')
7. Cedar Mtn. (7,665')
8. Cedar Mtns. (7,039')
9. Confusion Range (8,350')
10. Cricket Mtns. (7,040')
11. Deep Creek Mtns. (12,101')
12. Escalante Mtns. (10,748')
13. Fish Springs Range (8,523')
14. Grouse Creek Mtns. (9,046')
15. Henry Mtns. (11,522')
16. House Range (9,669')
17. Indian Peak Range (9,785')
18. Kaiparowits Plateau (9,293')
19. La Sal Mtns. (12,721')
20. Markagunt Plateau (11,146')
21. Navajo Mtn. (10,388')
22. Newfoundland Range (6,984')
23. Onaqui Mtns. (9,067')
24. Oquirrh Mtns. (10,620')
25. Paunsaugunt Plateau (9,630')
26. Pahvant Range (10,216')
27. Pine Valley Mtns. (10,325')
28. Raft River Mtns. (9,892')
29. San Pitch Mtns.(8,959')
30. Sevier Plateau (11,227')
31. Sheep Rock Mtns. (8,516')
32. Stansbury Mtns. (11,031')
33. Taviputs Plateau (10,285')
34. Tintic Mtns. (8,108')
35. Tushar Mtns. (12,173')
36. Uinta Mtns. (13,528')
37. Valley Mtns. (8,189')
38. Wah Wah Mtns. (9,105')
39. Wasatch Plateau (10,666')
40. Wasatch Range (11,877')
41. Wellsville Mtns. (9,356')

Utah Atlas & Gazetter, 1993

Common Plants and Animals of Utah's Mountains


pasque flower

Zone	*Plants*	*Animals*
Alpine	barrenground willow planeleaf willow tufted hairgrass kobresia black alpine sedge mountain avens American bistort marsh-marigold moss pink rock selaginella alpine sandwort	boreal toad rosy finch horned lark American pipit white-crowned sparrow elk masked shrew montane vole northern pocket gopher yellow-bellied marmot pika
Hudsonian (subalpine)	Englemann spruce subalpine fir whortleberry blueberry gooseberry currant broad-leaved arnica shrubby cinquefoil blue columbine elk sedge woodnymph Jacob's ladder	mountain chickadee olive-sided flycatcher ruby-crowned kinglet gray jay yellow-rumped warbler Clark's nutcracker red-naped sapsucker snowshoe hare marten southern red-backed vole long-tailed weasel
Canadian (montane)	Douglas fir white fir aspen lodgepole pine ponderosa pine kinnikinnik whortleberry heart-leaved arnica chokecherry wax current spike fescue sulphur-flower	northern sagebrush lizard short-horned lizard tiger salamander mountain bluebird Steller's jay dark-eyed junco white-breasted nuthatch Nuttall's cottontail porcupine Abert's squirrel mule deer northern pocket gopher
Transition (foothills)	mountain mahogany juniper pinyon pine Gambel oak rabbitbrush serviceberry bigtooth maple blue grama needle and thread copper mallow Indian paintbrush	northern sagebrush lizard side-blothched lizard tree lizard scrub jay spotted towhee (rufous-sided) Virginia's warbler pinyon jay coyote desert cottontail mule deer gray fox deer mouse



Rising sharply from the deserts, Utah's mountains capture an abundance of moisture from easterly moving clouds pushed upwards along the mountain flanks. As the clouds rise, they cool, losing their ability to hold water which falls as rain and snow.

The higher levels of precipitation in Utah's mountains influence the plant communities that are found at different elevations, and in turn, the animals that live there, creating a variety of life zones.

In *Rainfall and the Forest*, an activity in the Project WILD Guide (pp. 140-142), students can examine this relationship between rainfall, plant commmunities and wildlife distributions. In the activity, students work with vegetation maps and precipitation data to study this relationship.

Objectives: Students will: 1) correlate precipitation data with plant communities; 2) correlate plant communities with animal life; 3) recognize interrelationships among living and non-living elements of the environment; and 4) understand that populations and the fluctuations of those populations are influenced by ever-changing climatic conditions.

The data and maps needed to do this activity are difficult to find. However, a complete teaching packet (either elementary or secondary level) is now available! The activity especially adapted for Utah, including color maps, precipitation data, wildlife species photos, information and range maps can be requested from our office by calling (801) 538-4719.

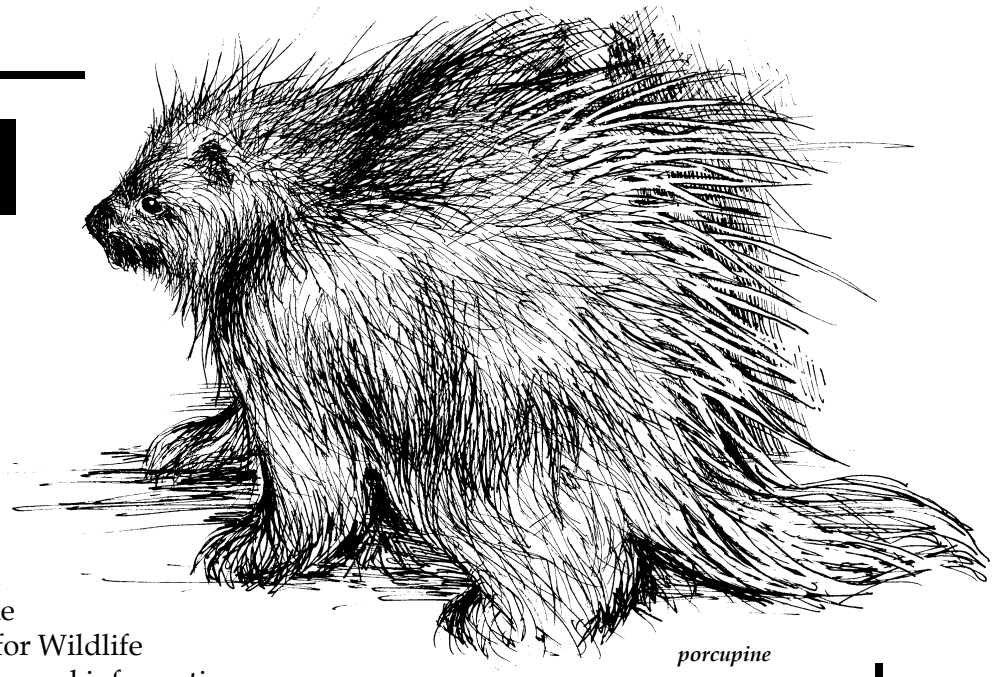
Let it Rain!

Request a Utah adaptation of *Rainfall and the Forest*. Here is what you get:

- Utah Natural Vegetation Map
- Utah Average Annual Precipitation Map
- Utah Elevation Map
- Utah Species Information Sheets/ Range Maps (taken from the Utah Wildlife Photo Series)
- Utah Precipitation/Elevation Data Sheet
- Sampling Station Map

Resources

Mountain Materials



porcupine

Activity Guides:
Forests Are More Than Trees - Educator's packet and activity guide produced by the National Wildlife Federation for Wildlife Week, 1988. Contains activities and information for grades K-12. Slide-tape program also available for checkout.

Old-Growth Forests: A Teacher's Guide - A set of activities and information produced by The Wilderness Society to teach about forest ecology and conservation.

Posters: Forest Life Posters - Contact your local USDA Forest Service office to request a series of forest posters featuring trees, leaves, mammals, fungi, flowers, and more. Teachers can request one set per school.

Videos: Check out videos on mountain ecology and wildlife including: The All American Bear; Wild About Elk; Cougar - Ghost of Rockies; Rocky Mountain High - Wildlife of the Alpine Tundra; Edge of the Wilderness; The Colorado - Secrets at the Source; and Life at the Top.

Books:
Ancient Forests: Discovering Nature - An interactive, activity-centered book focusing on forest ecology, values, and sustainability. Grades 3-7.

Forest Life: A close-up look at the natural world of a forest - A book in the "Look Closer" series for young readers. Contents include larger-than-life photographs of forest creatures and plants.

Internet:
Good Green Fun (http://www.enf.org/~dharmika/index.htm) - A set of great songs and activities for children about tropical and temperate forests, and many informative links to a wealth of information about forest animals and plants, ecological concepts such as biodiversity, conservation, restoration and deforestation, and much more!

Free Mountain Resources

Call Project WILD for your free copy!!

Relief Map of Utah: Colorful, full-sized map showing the various life zones found in Utah.

Canyons of the Wasatch: A Salt Lake Tribune supplement featuring the Wasatch Range. Includes a discussion of mountain ecology, wildlife, recreation, and human impacts to the Wasatch Range.

Bear Food Tokens: Request bear food token masters for the Project WILD activity "How Many Bears Can Live In This Forest?"

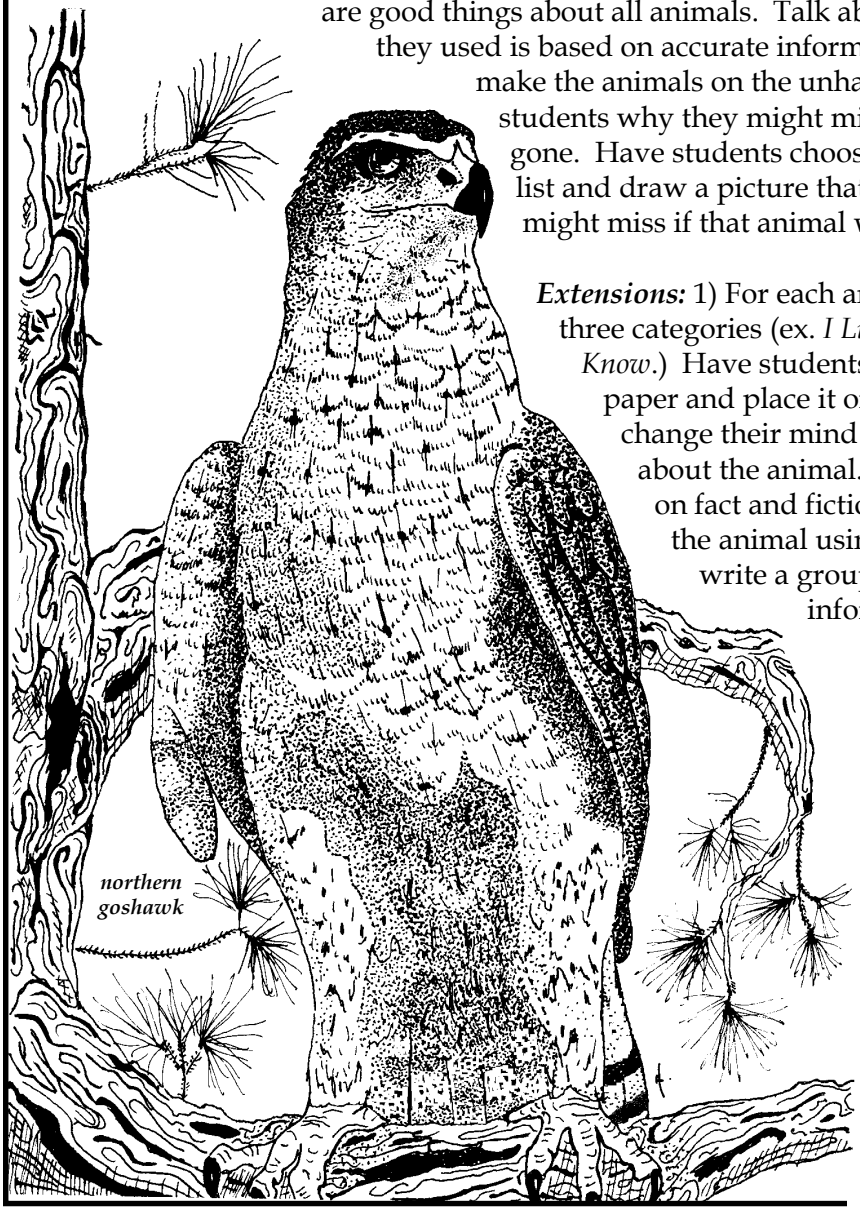
National Forests in Utah: Brochure produced by the USDA Forest Service featuring descriptions and information on Utah's national forests.

Encourage young students to examine their spontaneous reactions to different animals and explore reasons why all animals are important.

Objectives: Students will: 1) identify their positive and negative reactions to animals; 2) understand that their reactions may be based on information that is not accurate; 3) recognize that all animals are important to ecosystems - even animals that people respond to with fear.

Materials: a variety of large photographs of animals, including animals that students might think are "cute" and some they might think are "scary", flip chart and colorful pens.

Procedure: 1) Show a photograph of an animal to the students. Ask them to raise their hand to tell you the first word they think of for the photo. On the chalk board, list the name of the animal and the word they say. Do this for each photo. 2) Ask students to identify which animals were given positive responses and which were given negative responses. Divide the animals into two lists. Label one with a happy face and the other with an unhappy face. 3) Ask students why some animals are on the happy list while others are not. Tell them that there are good things about all animals. Talk about whether the negative word they used is based on accurate information. 4) Discuss the things that make the animals on the unhappy list important. Ask students why they might miss these animals if they were gone. Have students choose an animal from the unhappy list and draw a picture that shows some good things we might miss if that animal were no longer around.



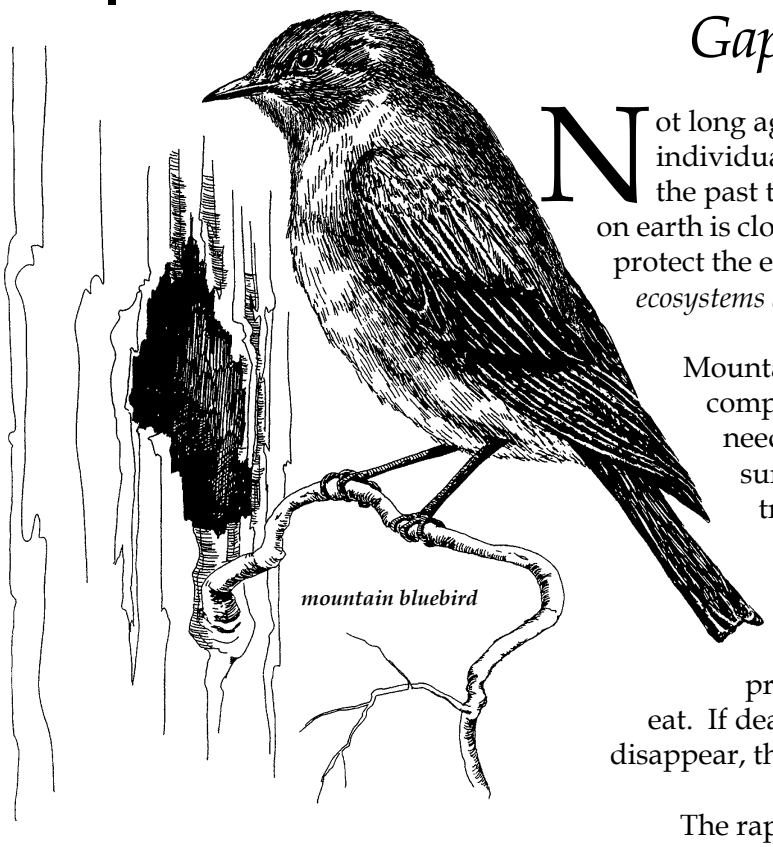
Extensions: 1) For each animal make a bar graph with three categories (ex. *I Like Bats*; *I Do Not Like Bats; I Don't Know*.) Have students write their name on a square of paper and place it on the graph. Allow them to change their mind as they learn. 2) Read books about the animal. Compare books that are based on fact and fiction. 3) Write a group story about the animal using accurate information, then write a group story with inaccurate information. Compare the two.

Resources

Wildlife Photographs: **Utah Wildlife Photo Series,* Project WILD
Videos: *Bugs Don't Bug Us,* Bo Peep Productions,**Eyewitness Series: Amphibians, Reptiles, Insects,* Dorling Kindersly
Books:*Night Creatures,* Susanne Whayne,**Zipping Zapping Zooming Bats,* Ann Earl, *It's Best to Leave a Snake Alone,* Alan Fowler, *Buzzing a Hive,* GEMS, *Those Amazing Ants,* Patricia Demuth, *Life of the Snail,* Theres Buholzer, *The Extremely Weird Series: Spiders, Reptiles, Insects, Bats, Snakes,* Sarah Lovett

Available from Project WILD

Biodiversity and the Utah Gap Analysis Project



Not long ago, biologists focused on protecting only individual species of plants and animals, but during the past twenty years people have realized that all life on earth is closely connected. Today, biologists are trying to protect the earth's biodiversity, *a variety of living things and ecosystems and genetic variability within species.*

Mountain bluebirds provide an example of the complexity of preserving biodiversity. Bluebirds need dead, standing trees and woodpeckers to survive. Woodpeckers create nest sites in dead trees by pecking out a cavity. Once woodpeckers abandon the nest, bluebirds will use the same cavity. Dead, standing trees are critical to the survival of both birds. In addition to nesting sites, the trees provide countless insects for woodpeckers to eat. If dead trees are removed or the woodpeckers disappear, the bluebirds will not be able to survive.

The rapid loss of biodiversity has become a great concern to scientists around the world. In the field of conservation biology, efforts to assess the current status of biodiversity have centered upon a technique called Gap Analysis.

"The first rule of intelligent tinkering is to save all the parts."

-Aldo Leopold-

Gap Analysis uses a system of map overlays to identify important unprotected areas (gaps). Four map layers are used: 1) vegetative cover types, 2) land ownership, 3) land management status and 4) distribution of animals (projected from vegetative data). Overlays of animal distribution and land ownership are used to estimate the extent of protection for plants and animals.

Once the "gaps" in protection are identified, biodiversity can be fostered by creating new preserves or changing land use practices.

Scientists with Utah State University and the Utah Cooperative Fish and Wildlife Research Unit in Logan have implemented a Gap Analysis project for the state of Utah. You and your students can benefit from this project. Research Utah's biodiversity and look for "gaps" that might exist near you by obtaining a copy of U.S.U.'s research packet, (see the box on this page). On the internet, learn more about Gap Analysis at http://www.nr.usu.edu/gap/gaphome.html.

Gap Goes WILD!

Get your free packet, now! It includes an unbelievable amount of information that can be used by teachers and secondary students. Besides four large, colorful, and informative maps - a vegetation map, a land use map, a land management map, and a satellite image of the state - there are 2 CD's that contain files on ecoregions, water bodies, roads, species distributions, wildlife habitat relationships, wildlife bibliographies and more! Information on acquiring the free software needed to access and manipulate these files is provided as well. To request a copy of the Utah Gap Analysis packet, call the Project WILD office at 801 538-4719.

Summer Studies

Climbing Higher

Teton Science School: Keepers of the Earth - Learn to use Native American stories and associated activities (from the Michael J. Caudato and Joseph Bruchac *Keepers* series) to help give meaning to environmental studies in the classroom. June 23-24. Credit available. Contact the Teton Science School, P.O. Box 68, Kelly, WY 83011 (307-733-4765).

Central Utah Outdoor Education Workshop: Experience a variety of activities designed to help students understand and respect their natural surroundings. Project WILD and Project Learning Tree workshops are offered. August 5-9. Salina, UT. Contact Bill Wood (801-896-6411) for details.

The Alpine Conference: Use the outdoors in teaching environmental responsibility and stewardship by incorporating problem-solving techniques, higher-level thinking skills and creative teaching strategies. June 16-21. Alpine, WY. For details, contact Dr. Richard McCloskey (800-632-6586 ext. 3490). Credit available.

Logan Canyon Teacher's Workshop: This workshop addresses ways to integrate environmental education themes into the school curriculum using the school grounds to enhance classroom teaching. June 10-12. Contact Dr. Sharon Ohlhurst, USU College of Natural Resources (801-797-2580) for details.

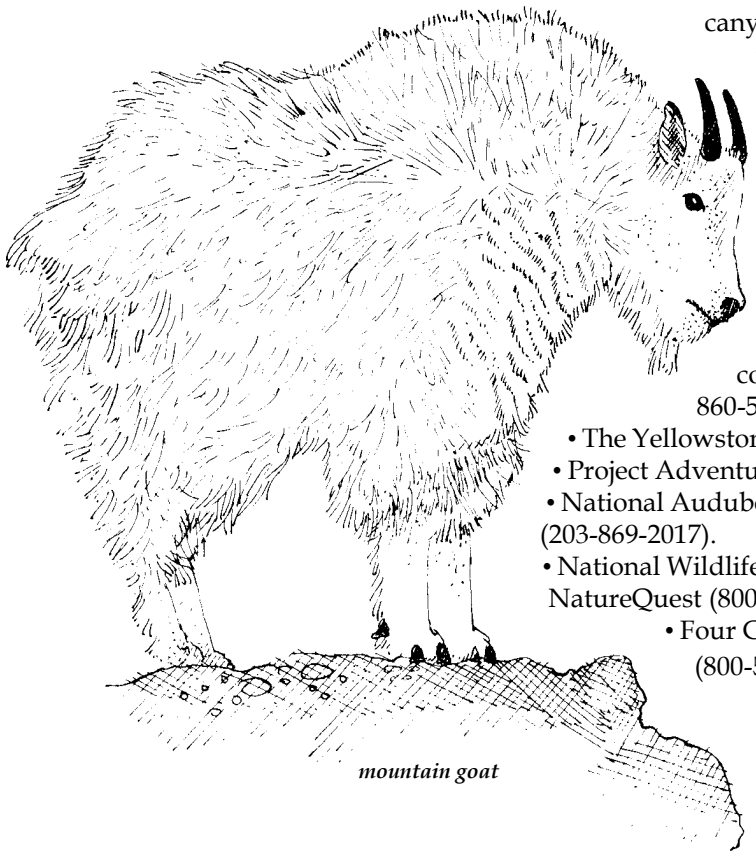
Utah Museum of Natural History Workshops: Contact Linda Monum (801-581-4887). Credit available.
• Mill Creek Canyon Rock Art Documentation: Study the prehistory of Utah through ancient rock art in beautiful Mill Creek Canyon near Moab. June 24-28.

• Geology of the Colorado Plateau: Gain the confidence and competence to teach basic geological concepts in the elementary earth-science core curriculum by focusing on the magnificent geology of the Colorado Plateau. July 28-August 2.

• San Juan River: Experience desert ecology and river ecology while rafting 80 miles of the San Juan River and hiking its canyons to ancient ruins. Hands-on activities for teachers included. June 17-23.

• Ethnobotany of the Esclante: Explore the Escalante region, discovering how earlier cultures used the ecosystems of this region for food, construction materials and medicines. August 8-10.

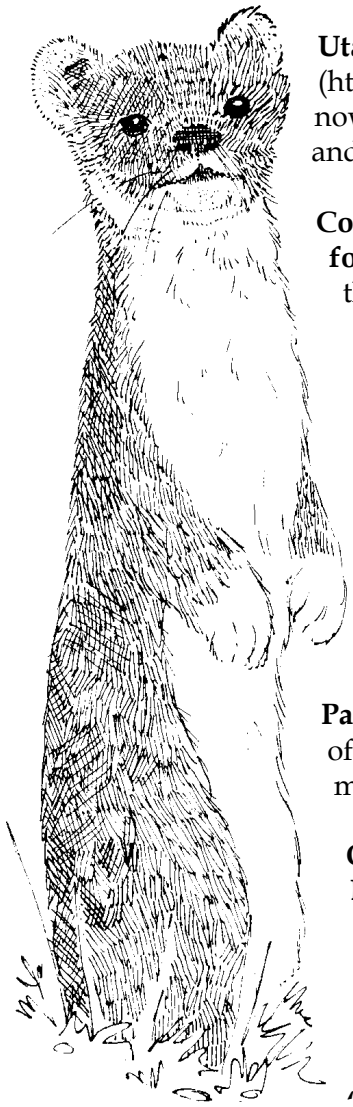
Other Outdoor Adventures: For a variety of additional exciting and informative workshops contact: Canyonlands Field Institute, Moab, UT (800-860-5262).
• The Yellowstone Institute, Yellowstone Park, WY (307-344-2294).
• Project Adventure Inc., Portland, OR (503-229-0169).
• National Audubon Camp of the West, Wind River Mountains, WY (203-869-2017).
• National Wildlife Federation Conservation Summits and NatureQuest (800 245-5484).
• Four Corners School of Outdoor Education, Monticello, UT (800-525-4456).



mountain goat

Resources

Just for You!



long-tailed weasel

Utah Department of Natural Resources/Project WILD Home Page (http://www.nr.state.ut.us/dwr/!homeypg.htm): Utah Project WILD now has its own internet site featuring information about Project WILD and a schedule of workshops.

Correlation of Project WILD activities to the Utah Core Curriculum for Science 7-12: An updated correlation of Project WILD activities to the 1995 Science Core.

Bill Nye the Science Guy: Many of the titles in this award-winning series are now available for checkout from Project WILD. Titles include: Mammals, Plants, Marine Mammals, Ocean Life, Population, Evolution, Animal Locomotion, Insects, Reptiles, Garbage, Biodiversity, Food Web, Fish, Water Cycle and Forest.

"Wing It - Utah's Migratory Songbirds" Poster: A colorful poster highlighting a variety of Utah's migratory bird species and their breeding and wintering areas.

Partners in Flight Poster, "Companeros de Vuelo": Call for your copy of this beautiful, two-sided poster which has information about migratory songbirds and their habitats in both hemispheres.

One With the Watershed: A Story-based Curriculum for Primary Environmental Education: This curriculum helps young people learn about salmon and their ecology through story, experience and information. It focuses on the idea that what sustains the fish sustains us all, and that people can share watersheds in harmony with nature.

"Wonders on the Wing": Educator's activity guide and video focusing on the plight of migratory songbirds and songbird conservation. Available for checkout.

Fish and Wildlife Biodiversity Funding Initiative: Brochure on "Teaming With Wildlife" that gives information on this initiative to help preserve biodiversity.

***Project WILD* (801) 538-4719**

T-Shirts! T-Shirts! T-Shirts!

We have reprinted all your old favorites on exciting new colors. The 100% cotton shirts come in large and extra large. Call Project WILD today and place your order. All money donated for t-shirts will fund advanced wildlife workshops.

Spotted Bat Chasing Moth - $10
Eggplant (maroon) or Juniper (grey-green)

WILD Thing Brine Shrimp - $10
Watermelon (light red) or Seafoam (light teal)

Banded Gecko in the Mojave Desert - $10
Cedar (yellowish red) or Butter (yellow)

project WILD®

Utah Division of Wildlife Resources
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Salt Lake City, Utah 84116

Growing WILD is written by Bob Ellis, Diana Vos, and Audrey Walker. Jill Rensel drew the mountain scenes, marten, porcupine and silhouettes. Doug Moore drew the short-horned lizard. Robert Hibberd drew the northern goshawk.

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